1-1-1986

The Significance of Recent Developments in the Philosophical Analysis of Reference for Neoclassical Economics

John B. Davis
Marquette University, john.davis@marquette.edu

Published version. Published as part of the proceedings of the conference, *The History of Economics Society Annual Conference*, 1986. Publisher Link.

The Significance of Recent Developments in the Philosophical Analysis of Reference for General Equilibrium Theory

J. B. Davis

University of Dallas
Irving, TX 75062

paper to be presented at the
The History of Economics Society Annual Conference
Barnard College
New York, New York

June 2-4, 1986

A familiar complaint against General Equilibrium theory is that it is unrealistic or bears insufficient relation to economic reality. This sort of charge, however, is of questionable value, since all theories are to an extent unrealistic, and since criteria for sufficient theoretical approximation of reality appear unavailable. Indeed, recent preoccupation among methodologists with the Kuhn-type concern that the competition among paradigms may be inherently irresolvable suggests that the idea of a theory's approximation of reality might be either incoherent or at best without practical implication. This post-Kantian view, that is, accepts the proposition that theory largely dictates the very character of reality, such that adjudication between incommensurable well-developed theories is all but impossible.

In this paper, it is maintained that the complacency with which these conclusions are defended derives from an uncritical acceptance of the traditional analysis of reference implicit in the post-Kantian philosophical tradition. That since the early 1970s this traditional theory has been subjected to powerful criticism by a number of philosophers, moreover, suggests that it is no longer reasonable to ignore the question of sufficient theoretical approximation of reality. Finally, should truth indeed be determined paradigmatically, that is, within the context of a theory, then whether a theory can be said to actually pick out objects in the world that are named within the theory becomes a matter of pre-eminent importance.

The question for General Equilibrium theory, then, is not

whether it bears insufficient relation to economic reality, but rather whether it possesses a coherent and systematic analysis of reference, that is, an analysis that allows the theory to coherently and systematically pick out objects in the world which are named within the theory. Should, in resistance to the posing of this question, it be claimed by General Equilibrium theorists that such a matter is extra-economic and essentially philosophic, two responses are in order. First, since virtually everyone would deny that General Equilibrium theory bears no relation to economic reality whatsoever, it must bear some such relation, and thus at least implicitly presupposes some analysis of reference which is accordingly subject to examination. Second, as will be argued below, the axiomatic character of General Equilibrium theory reveals this implicit analysis to be very much a form of the traditional view of reference recently subjected to important criticism. First, then, what is the traditional view of reference?

The traditional view of reference[1] utilizes the Kantian distinction between analytic and synthetic judgments[2] to establish how and when a name (common noun or proper name) successfully picks out the object in the world to which it is meant to refer. In particular, the traditional view explains the meaning of a name, or the concept of the object in question, in terms of the properties analytically true of the name and thus essential or necessary to the object named. In the words of one of the foremost critics of this conception:

> On the traditional view, the meaning of say, "lemon," is given by specifying a conjunction of properties. For each of these properties, the statement "lemons have the property P" is an analytic truth; and if P_1, P_2, ... P_n are all of the properties in the conjunction, then "anything with all of the properties P_1, ..., P_n is a lemon" is likewise an analytic truth (Putnam, 1970, 51).

The conjunction of properties associated with a name is generally called the intension of the name. The extension of the name, on the other hand, is represented by the object or objects the name picks out. While some versions of the theory argue that proper application of a name allows for less than the full conjunction of properties analytically true of that name--a 'cluster of properties[3]'--in all other respects the relationship between the intension and extension of a name is preserved. On this view, then, the intension of a name determines its extension, or, simply, meaning determines reference.

Thus, whereas Kant had claimed that knowledge of the world is structured by the character of the human mind, the traditional view of reference requires that the meanings inherent in language dictate what can be picked out in the world. Kant's account in terms of judgments and concepts possesses an unnecessarily psychological flavor from the modern point of view, and moreover, his treatment of judgment appears ambiguous between the act of judging and what is judged. If, however, his analysis is restricted to an account of what is judged, namely, propositions

or statements, the psychological character of concepts or meanings is replaced by their propositional or linguistic character. The traditional view of reference, then, is essentially consistent with the Kantian approach in that it characterizes a system of representation, linguistic rather than psychological, in terms that permit identification of that about which certainty is possible, namely, analytical truths about concepts and their properties. In contrast, the new view of reference,[4] which has emerged through recent critique of the traditional view, maintains that there are necessary truths about objects in the world that are not known in virtue of analytical truths about the concepts of those objects and their properties, and, as a matter of historical or scientific fact, extension, or how things come to be named, as often as not, determines intension, or the concept or meaning associated with a name. Before examining this new view and its critique of the traditional approach, however, it is important to elicit the implicit reliance of General Equilibrium theory upon the traditional account of reference.

General Equilibrium theory is largely coextensive with the theory of value of a competitive economy. In Debreu's words, two problems are central to this theory and thereby constitute its character; they are:

> (1) the explanation of the prices of commodities resulting from the interaction of the agents of a private ownership economy through markets, (2) the explanation of the role of prices in an optimal state of any economy (Debreu, ix).

Though Walras and Pareto produced solutions to these problems, the formal structure of General Equilibrium theory has only been demonstrated relatively recently, beginning with the work of Wald in the 1930s in connection with the first problem, and continuing with the work of Koopmans after 1950 in connection with the second.[5] It is fair to say, therefore, that the proper form for General Equilibrium theory is the axiomatic one that dominates the concerns of contemporary General Equilibrium theorists. However, it is this axiomatic form which imposes the traditional theory of reference on General Equilibrium theory.

The axiomatic method, broadly speaking, links postulates or assumptions to particular conclusions by a chain of logical deductions. In General Equilibrium theory these assumptions concern the fundamental concepts of the competitive economy, namely, commodity, price, producer, production plan, the set of possible production plans, consumer, consumption plan, the set of possible consumption plans, preferences,wealth, total resources, the economy, a private ownership economy, equilibrium and the optimum (Debreu; 28, 37, 50, 74, 75, 79, 83, 90). While attention to the deductive character of the analysis commonly dominates interest in its axiomatic formulation, from the present point of view, the crucial element of the method concerns the determination of its concepts, since it is these components, via their designations or names ("commodity," "price," etc.) that pick out or refer to actual individuals or objects in the world. Indeed, it would certainly be unpromising to question the deductive structure

of General Equilibrium theory in light of its extensive examination and the confidence generally invested in the laws of logic. In contrast, little attention has been devoted to the philosophical character of General Equilibrium theory concept determination and its impact on the referential capacity of the theory.

To see, then, that the formulation of concepts in General Equilibrium theory reflects the traditional theory of reference, recall that the distinctive feature of the latter, as expressed by Putnam, is that the properties of a concept are all analytically and thus a priori true of that concept ("the statement 'lemons have the property P' is an analytic truth"). The argument here, thus, is that the axiomatic character of General Equilibrium theory requires that properties true of concepts be treated as analytically true of those concepts. It is important to emphasize that this is the effect rather than the intent of General Equilibrium theory, since the mathematical philosophy of its proponents is specifically formalist (Debreu, x). Formalism derives from Kant through Hilbert, and asserts that the truths of mathematic are <u>not</u> analytic. More generally, formalism is the view that mathematical systems are essentially to be regarded as nothing but formalized systems, or that as systems of symbolic relations they possess their validity independently of any interpretation of their symbols.[6] How, then, are the connections between properties and concepts to be regarded as analytic, or, how is it that a property ascribed to a given concept is part of the meaning of the latter in General Equilibrium theory?

In the first place, unlike most formalist mathematical systems, axiomatic General Equilibrium theory does not pretend to be indeterminate of application or fully independent of theorem interpretation. On the contrary, as noted above, virtually all General Equilibrium theorists would deny that the theory bears no relation whatsoever to economic reality, and most would insist in fact that it does bear some such relation. Specifically, in its solution to its two central problems, General Equilibrium theory purports to characterize important features of a market economy. Yet if this is the case, then though the properties ascribed to various concepts are not ostensibly a priori analytically true of those concepts, nonetheless the successful completion of the proofs for the existence and optimality of equilibrium requires that these properties be so ascribed to their concepts.

For example, preferences must be convex in the argument concerning consumers and demand for the proofs ultimately at issue to be completed. That preferences cannot but be convex is tantamount to saying that the concept of preferences necessarily includes the property of convexity--in the framework of the proofs at hand. Of course, were no particular conclusion to the proofs of 'existence' and 'optimality' required, or were it just as reasonable to demonstrate nonexistence and/or non-optimality of a market equilibrium, then it would not be necessary that preferences be convex. In terms of formalist mathematical systems, as long as application or interpretation is strictly indeterminate, the propositions and theorems of the analysis need not be analytic.

On the other hand, as soon as a system is constrained to achieve a particular result desired from the point of view of its interpretation, the relation between properties and concepts loses its stipulative or synthetic character. Thus if the two proofs of General Equilibrium theory are indeed about markets, as they are claimed to be, rather than simply about configurations of logical symbols, as formalism implies, then it is unavoidable that the relation between concepts and their properties assume an analytic character.[7]

These conclusions are reinforced by consideration of an alternative type of connection between concepts and their properties. If properties of a concept are analytically ascribable to it, then such relations are established a priori, that is, apart from experience. In contrast, properties ascribed to concepts a posteriori are in some fashion discovered from experience to be so ascribable, and accordingly it cannot be said that somehow the meaning of the concept in question includes that of the property ascribable to it.

In General Equilibrium theory, then, it is hardly the case that, say, preferences have been discovered to be convex. Indeed non-convex preferences, should they be observed, are conventionally regarded as a departure from rational behavior, such that the concepts of the consumer and preferences are necessarily associated with convexity of preferences. Put differently, a nonanalytic relation between a concept and its properties can be guaranteed by determining that relation from experience or

a posteriori, while recourse to the concept of a rational consumer by nature precludes this guarantee.

Thus, if General Equilibrium theory does implicitly employ the traditional analysis of reference, what are the problems with that analysis, and how do they bear on General Equilibrium theory itself? Recall that on the traditional view the properties true of a concept are analytically or a priori true of that concept, and the name of that concept (e.g., "consumer" for consumer) picks out or refers to those objects in the world that indeed possess those properties. The new view of reference makes at least four objections to this account.

First, that a given concept can be reasoned a priori to have certain properties associated with it, does not imply that real examples of the object designated will also have those properties. Thus, should understanding of a concept, and thereby the object designated by its name, change in the sense that new or different properties are reasoned characteristic of that concept and object, then the traditional view requires that an altogether new or different concept and object be the subject of that new understanding. But in this case, there would be no continuity to the apparent development of understanding, since strictly speaking it would not be appropriate to say that the new understanding concerned the same concept and object examined in the previous conception.

More simply, the traditional view lacks a criterion of identity of concepts and objects across changes in constituting

properties. This follows from its reliance upon conceptual conjunction (or 'clustering') of properties for the identification of concepts and their objects. Loosely speaking, on a more 'realistically' oriented analysis, the world permits some continuity of objects variously conceptualized at different times and across theories. Though of course how this occurs is quite problematic, it is fair to allow that some basis for cross-conceptualization identity of concepts and objects is crucial to understanding and thus that it is probably mistaken to confuse what is problematic with what is impossible. Moreover, if property characterization of concepts and objects does not itself provide this criterion, it is reasonable to hypothesize that it is somehow 'given' by the world. Thus, at best, the traditional view is an entirely static account of concept constitution.

General Equilibrium theory, then, in relying upon the traditional theory of reference, is unable to identify concepts and objects across changes in their conceptualization. For example, should consumers be found with non-convex preferences, that is, for some reason demonstrating an increasing marginal rate of substitution between goods, then these individuals cannot be characterized as consumers within General Equilibrium theory, if the theory is to continue to explain the existence and optimality of market equilibrium. In effect, these individuals are not rational, and therefore cannot be consumers. Accordingly, General Equilibrium theory cannot explain consumers, but rather only "consumers" defined in the context of the theory, given its

implicit analysis of reference.[8]

Second, in most cases the properties ascribed to concepts and objects are not a priori analytically true of those concepts and objects, except, perhaps, in those cases in which definitions are at work. Rather, in most cases properties ascribed to concepts and objects are contingently related to those concepts and objects as a result of scientific investigation. Put differently, most of what is known or understood about objects and their concepts has been achieved by empirical investigation rather than the analysis of meanings. That is, properties are ascribed to concepts a posteriori rather than a priori. Putnam comments on this point in the course of his general critique of the traditional analysis.

> What has happened is this: the traditional theory has taken an account which is correct for the "one criterion" concepts (i.e., for such concepts as "bachelor" and "vixen"), and made it a general account of the meaning of general names. A theory which correctly describes the behavior of perhaps three hundred words has been asserted to correctly describe the behavior of the tens of thousands of general names (Putnam, 1970, 56).

The consequence, accordingly, is the misperception that a property arguably implicit in the meaning of a concept is also ascribable to objects named via that concept. However, it is a matter of practical investigation whether a property imaginably appropriate to the concept of an object is in fact appropriate to the concept of that object. The traditional theory neglects

this point.

Thus, General Equilibrium theory does not investigate whether, say, consumers can be said to have convex preferences. Indeed, from the point of view of the theory, there is no reason to investigate the possibility of non-convex preferences, since they are precluded by the concept of the rational consumer. Alternatively, the only investigation the theory permits is that which confirms convex preferences, such that contingently established relationships are first and foremost a priori ones. More generally, the implicit adoption of the traditional analysis of reference precludes empirical investigation for General Equilibrium theory. This conclusion, clearly, goes beyond any of the familiar complaints that General Equilibrium theory 'poorly' approximates or is 'difficult' to apply to economic reality.

The third objection to the traditional view of reference is that it fails to distinguish attributive and referential uses of names or identifying descriptions, and that this failure generates paradoxical results for the view. Donnellan is responsible for this distinction.

> A speaker who uses a definite description attributively in an assertion states something about whoever or whatever is the so-and-so. A speaker who uses a definite description referentially in an assertion, on the other hand, uses the description to enable his audience to pick out whom or what he is talking about and states something about that person or thing (Donnellan, 1966).

Significantly, a name or description used referentially may well

pick out an object in the world though it in fact mislabels that object. "Smith's Murderer," thought to be Jones when Jones is actually innocent, may successfully pick out Jones in certain conversational contexts though mislabeling him. The use of a label in this manner, then, does not necessarily make reference to whomever or whatever it apparently describes. Rather names or labels so used pick out objects in the world, irrespective of their descriptive adequacy. In contrast, the attributive use of a name or label, which is the only use the traditional view allows, precludes saying "Smith's Murderer" without full knowledge of Smith's murderer.

Donnellan's distinction clearly has considerable persuasiveness in a world of less than perfect knowledge. Should names or labels always pick out whatever or whomever they describe (the attributive use characteristic of the traditional view), then in the presence of ignorance, little discussion between speakers would be possible. Moreover, those adopting different conceptualizations could never claim to be intent upon establishing what might be known about common subject matters, and thus, science, as commonly understood,would itself be all but impossible. In fact, however, communication between those adopting different characterizations of concepts and objects is not impossible, though often difficult. It seems fair to say, then, that the failure to distinguish the different senses in which names or descriptions can be used leads to a misunderstanding of the social character of knowledge.

For General Equilibrium theory with its reliance on traditional reference, indeed, there is no incentive for communication with those adopting different conceptualizations of, say, the consumer, because the theory lacks any means of referring to anything but that which it captures in its own concept of the consumer. Indeed, because of its reliance on the traditional view of reference, the theory only jeopardizes its very existence by allowing that there are consumers (not "consumers") to discuss with those of different theoretical standpoints. In contrast, any theoretical approach that allows for the referential use of names of concepts--and thus allows that the properties true of concepts are contingently associated with those concepts and may be revised--permits intertheoretical discussion of concepts such as that of the consumer without, at the same time, threatening the non-referential principles of the approach. In effect systematic debate between approaches is only possible in the framework of a posteriori concept formulation.

The fourth objection to the traditional view of reference is that it excludes a comprehensive and adequate conception of necessary relationships. In Kripke's view, it is important to distinguish between necessary and a priori truths.

> What do we mean by calling a statement necessary? We simply mean that the statement in question, first, is true, and, second, that it could not have been otherwise. When we say something is contingently true, we mean that, though it is in fact the case, it could have been the case that things would have been otherwise.

To the contrary, there is the notion of a priori

> truth. An a priori truth is supposed to be one which can be known to be true independently of all experience. Notice that this does not in and of itself say anything about all possible worlds, unless this is put into the definition (Kripke, 1971, 136).

Necessary truths, for Kripke, are the subject matter of metaphysics, or the philosophy of what exists, while a priori truths are the subject matter of epistemology. This distinction is important, then, because it is reasonable to believe that some things may be necessary irrespective of human knowledge. Moreover, on Kripke's view, that which can be known apart from experience and that which is necessarily the case do not overlap, since, as he argues at length, we must discover from the world what is necessarily the case, such that what is necessary is known to be such a posteriori. The traditional view of reference, accordingly, not only confuses what is knowable apart from experience with necessary relationships, but it also fails to grasp the genuine character of the necessary as that which must be the case irrespective of human cognition.

The significance of these points derives from scientific concern with the question of what is essential to an object. In a world of change and variability across members of any category, success in identifying objects in the world depends upon detecting what may be considered essential to them. Difficult as it is to establish what may be considered essential to any object, the need to identify and re-identify objects in the world makes some conception of necessary or essential properties important to

scientific reasoning. The traditional view of reference, however, by constituting the concept of an object via the simple conjunction of all those properties merely a priori true of that concept, abandons any distinction between what must be held intrinsic to the concept and object and what might not be. In brief, the traditional view of reference is not operative in the scientific domain in which this distinction is central.

In the case of the concept of the consumer in General Equilibrium theory, then, all the properties ascribable to the concept of the consumer are essential to that concept with the same a priori certainty. Indeed, the effect of abandoning any one of the properties of the consumer (convexity of preferences, transitivity of preferences, etc.) is in effect the same as abandoning any other, namely, the proofs of existence and optimality fail. Moreover, though the theory may fail in different ways when different properties are abandoned, this tells nothing about which properties are crucial to the concept of the consumer itself.

Given these four objections, several points summarize the issues involved in the current controversy over reference. They concern current views about the theory-ladenness of facts, competition between paradigms of different economic theories, and the status of different economic paradigms.

First, though it is commonly believed that since all facts are theory-laden, objects in the world lack any conceptual status independent of the theory in which they are cognized, the dis-

cussion above implies this inference is mistaken. Thus, while it is true that facts are theory-laden, to exaggerate the significance of this is in effect to assume that objects in the world are themselves altogether constituted by conceptualization, and thus to deny their objective character itself. This, indeed, is the inadvertent conclusion of the traditional theory of reference, since on the principle that meaning determines reference or intension determines extension, the analysis of meaning tells us exactly what may be found in the world, and thus rules out the possibility that what exists may be cognitively available to us prior to its adequate theoretical characterization.

Objects in the world, however, do possess some conceptual status for us independent of or prior to any developed or theory-determined elaboration of their properties, and it is this which makes science inherently empirical as well as conceptual. The traditional theory of reference, then, is incompatible with the accepted character of science, and so inimical to a scientific treatment of market economics.

Second, if truth itself is arguably paradigm-relative, or established as a property of the statements within a theory, then the view of reference adopted by a theory is a crucial element in its evaluation. That is, if it is not plausible to say that the relation of a theory's statements to the world can be assessed in terms of the correspondence theory of truth, it is all the more important to ask whether that which is named in the theory can be said to systematically and coherently pick out objects in

the world. A theory's analysis of reference, then, is a key means of judging competition between paradigms. Specifically, whether a given theory's concepts via their names can genuinely be said to pick out the objects in the world they are meant to designate says a great deal about the theory relative to other theories less successful in this regard. Indeed, if competing theories are equally well-developed in their chains of inference, it may be that their respective capacities to refer to the world alone distinguish them. At the same time, the skepticism and relativism generated by Kuhn's thinking is undermined when differences in concept formulation in this respect are considered.

Finally, a brief glance at the main idea of the new theory of reference provides a basis for judging the status of different economic paradigms. On the new view, since names are not descriptive summaries of concepts and their associated properties, names come to have their referential function more or less arbitrarily from the point of view of their possible meaning elaboration. Very briefly, certain things come to be 'baptised' as such-and-such at certain points in history, and then, irrespective of future elaboration of the associated concept, retain their initial designation within the community of those investigating the concept by a sort of 'referential chain' (Putnam, 1973). Alternatively, once a thing is labeled with a particular name, although the understanding of that thing may change, the name functions as a "rigid designator."[9]

For example, though economists have very different views

about the concept of the vision of labor, all are more or less referring to the same real world phenomenon. Indeed, though, it may be especially difficult to state in language acceptable to all just precisely what this same real world phenomenon is, that economists can disagree about the proper characterization of the division of labor itself implies that on the whole they refer to one thing in common. The referential capacity of different economic theories, the can be judged by the extent to which a theory operates in terms of concepts 'given' to the subject matter by the experience of past naming, or, conversely, by the extent to which a theory generates it own concepts in abstraction from those taken as common subject matte

General Equilibrium theory stands in a questionable position on this score. While some of its concepts have been taken from the experience of past naming in economics at least in name, its implicit analysis of reference precludes those concepts from comparative evaluation with their formulation in other theories. Accordingly, the burden of proof rests upon General Equilibrium theory to demonstrate that it is concerned with the same concepts that preoccupy other theories. Failure to demonstrate this, of course, suggests that General Equilibrium theory is extra-economic in its concerns, say, principally mathematical in those concerns. Indeed, the argument of this paper is that the implicit theory of reference inescapably associated with General Equilibrium theory makes even an interest in comparative concept discussion unlikely if not impossibl such that practically, as well as theoretically, General Equilibrium theory is irremediably outside the mainstream of economics.

Footnotes

[1]The chief contributors are Gottlob Frege, Bertrand Russell, P. F. Strawson, and John Searle. For references and a survey of similarities and differences of Frege, Russell, and Strawson, see Linsky (1967a, 1967b). For Searle's more recent contribution, see Searle (1958, 1969). For an introduction to the controversy over reference, see the "Introduction" to Schwartz (1977). It should be noted that the thinking of these individuals is neither strictly nor uniformly post-Kantian.

[2]The original discussion is in Kant (1929; 41-5, 48-51, 189-191). Roughly speaking, for an analytic truth the meaning of the predicate is somehow 'contained' in the meaning of the subject, while a synthetic truth holds as a matter of fact. Kant considered all analytic truths to be known a priori, that is, apart from experience. Following Leibniz and Hume, Kant's distinction between analytic a priori and synthetic a posterori truths is basically that between necessary and contingent truths.

[3]Wittgenstein's Philosophical Investigations treatment of family resemblances is an example of the 'cluster' notion of a concept or meaning.

[4]The three individuals most responsible for the new view are Saul Kripke, Hilary Putnam, and Keith Donnellan. Kripke's views derive from his understanding of identity in counterfactual situations, Putnam's are associated with his scientific realism, and Donnellan's stem from his treatment of attributive and referential uses of identifying descriptions. However, controversy over analyticity has been widespread since Quine (1961, 20-46).

[5]For a survey of the contributions to the axiomatic analysis of General Equilibrium theory, see Weintraub (1983).

[6]For a brief account of formalism in mathematics, see Black (1965, 147-151). Black suggests that the approach has foundered on its principle that the validity of mathematical systems is fully independent of their interpretation since Godel's incompleteness argument. In a fashion, the argument of this paper makes a similar point. That is, the desired interpretive independence of General Equilibrium theory, required for the formal adequacy of the system, makes a coherent account of the referential capacity of the theory problematic.

[7]In the Theory of Value, Debreu is at best ambiguous about the issues surrounding interpretation of formalist systems. See his brief remarks about the dichotomy between the axiomatic form of the analysis and its interpretations (Debreu, x).

[8]See Putnam (1970) for this general argument. Putnam places slightly more emphasis on the question of "abnormal" members of a category or, as he puts it, a "natural kind."

[9]This is Kripke's term. The new view does allow that the understanding of some things may change so much that they are re-named. However, for there to be any continuity in what a developing understanding of some thing is about, an object even to be re-named must maintain its historical tag to some extent. That the process of re-naming makes it difficult to say in actual cases whether the same thing is at issue does not imply that the new view of reference is mistaken.

Bibliography

Black, Max. 1965. The Nature of Mathematics. Totowa, New Jersey: Littlefield, Adams & Co.

Debreu, Gerard. 1959. Theory of Value, An Axiomatic Analysis of Economic Equilibrium. New Haven, Connecticut: Yale.

Donnellan, Keith S. 1966. Reference and Definite Descriptions, The Philosophical Review LXXV: 281-304.

Kant, Immanuel. 1929. Critique of Pure Reason. Translated by Norman Kemp Smith. London: Macmillan.

Kripke, Saul. 1971. Identity and Necessity. In,M. K. Munitz (ed.), Identity and Individuation: 135-164. New York: New York University.

_____. 1980. Naming and Necessity. Cambridge, Massachusetts: Harvard.

Linsky, Leonard. 1967a. Referring. London: Routledge & Kegan Paul.

_____. 1967b. Referring. In, Paul Edwards (ed.), The Encyclopedia of Philosophy, vol. 7: 95-99. London: Collier-Macmillan.

Putnam, Hilary. 1970. Is Semantics Possible? In, H. E. Kiefer and M. K. Munitz (eds.), Language, Belief, and Metaphysics: 50-63. New York: State University of New York.

_____. 1973. Meaning and Reference. The Journal of Philosophy LXX: 699-711.

Quine, Willard Van Orman. 1961. Two Dogmas of Empiricism. In From a Logical Point of View. New York: Harper.

Schwartz, Stephen P. (ed.). 1977. Naming, Necessity, and Natural Kinds. Ithaca, New York: Cornell.

Searle, John. 1958. Proper Names. Mind LXVII: 166-173.

_____. 1969. Speech Acts. Cambridge: Cambridge University Press.

Weintraub, E. Roy. 1983. On the Existence of a Competitive Equilibrium: 1930-1954. Journal of Economic Literature XXI 1-39.

Wittgenstein, Ludwig. 1953. Philosophical Investigations. Translated by G. E. M. Auscombe. New York: Macmillan.